

NORTON SOUND  
WINTER RED KING CRAB STUDIES 1991

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## INTRODUCTION

The winter king crab project began in February of 1982, with sampling procedures standardized in 1983. Results of prior studies were reported by Schwarz and Lean 1982, 1983, 1984, Lean and Brannian 1987, Lean 1987, Bue and Lean 1989, and Gebhard and Knuepfer 1990. The entire 1988 season was missed due to poor ice conditions.

The study had been restricted in the past to a narrow section of ice, directly offshore from the Nome State office building and extending 1/2 to 2 miles offshore. Shorefast and sea ice conditions constantly change and vary from location to location. During the 1989 and 1990 seasons, the study area was expanded to 6 miles west of Nome in the vicinity of gold dredging activity, and 6 miles east of Nome where very little subsistence crabbing effort took place. This wider range in study area reduced the chance of lost fishing time due to poor ice conditions.

## OBJECTIVES

The objectives of the winter crab project are:

1. Monitor nearshore distribution and abundance of king crab during the months of highest local use.
2. Document distribution of fishermen.
3. Monitor the number and carapace age of sublegal and legal crab in the study's catch to determine recruitment.
4. Tag healthy adult male king crab that have a carapace length greater than 89 mm. This will assist in the monitoring of movement, growth and frequency of molting.
5. Monitor other life history and biological data such as egg development and clutch size of female crab, disease and parasitism, incidence of competing species.

## METHODS

### Study Area

Four permanent fishing stations were established at various depths during the 1983 winter crab study (Figure 1). This was done so that the distribution of crab in nearshore waters could be evaluated. Station one was approximately 0.5 mile from shore and in water measuring 20 feet in depth from the surface of the ice to the ocean bottom. Stations two, three, and four were approximately 0.75, 1.25 and 2 miles offshore in depths of 42, 50, and 60 feet of water. Depths were checked using a weighted string before establishing a station. The proper location along the shore was determined by aligning the middle White Alice tower with the stack on top of the post office. Since 1983, study sites have been located as close as possible to these sites so results would be comparable.

In the 1989 and 1990 season, test sites were expanded and modified due to the changed project design (Figure 2). During the 1989 study, only stations 2 and 3 were used and renamed Nome 2 and Nome 3. Three new test sites were also established. Two stations were placed approximately 6 miles west of Nome, labeled West 1 and West 2. West 1 (in 40 feet of water) was located by the intersection of three rays. One ray is the line of site along the major mountain ridge between Bowhead and Willow Creeks. Another is along the Anvil Mountain West ridge. The third ray is the alignment of a rock outcropping, near the Teller Road between Penny River and Sunset Creek, with the 1270 foot peak directly north. Station West 2 (in 50 feet of water) was located due south of West 1 along the third alignment ray. The third station, labeled East 1, was placed approximately 6 mile east of Nome, aligned with the V.O.R. transmitter and the White Alice tower, in 40 feet of water. In 1990 an additional station named East 2 was established approximately 0.5 mile farther offshore from East 1 in 50 feet of water.

Only stations West 1, West 2, Nome 2, and Nome 3 were utilized during the 1991 winter crab study. The stations East of town could not be fished due to unstable ice conditions. Detailed instructions on how the station ice is prepared to put a pot down are given in the operational plan.

### Test Fishing

Throughout the history of the winter study, the same crab pot design has been used. Pots were purchased at "Arc 'n' Spark Welding, Inc." in Kodiak, Alaska. The shape of the pot is a truncated cone with a base diameter of 4 feet and a top diameter of



24 inches. The height is approximately 24 inches. The entrance is 16-18 inches in diameter, and located in the center of the top of the pot. There is a 6-8 inch plastic collar hanging from the entrance to keep crab from escaping.

Standardized baiting of pots was conducted so that differing catches between stations would not be attributed to the amount of bait used but rather to differences in the abundance of crab at each station. Two, one quart bait containers of chopped herring and a string of 10 saffron cod were hung in each pot, each time the pot was sampled. Bait was thawed before use, but occasionally became partially frozen before it could be put into the pot. Herring used was commercial quality bait.

Detailed instructions on how the catch is processed are given in the operational plan. The following is a summary of the sampling procedure. Pots were brought near the surface and suspended so that all crab in the pot were covered with about one foot of water. Crab were removed one at a time, placed in a heated tagging barrel, measured, shell age determined, egg development noted on females, and new shell crab in good condition and larger than 89 mm were tagged with hog ring tags and elastrator bands. When eggs were not clearly in the eyed condition, samples were taken in order to assess egg development. Crab were then released through the same hole that the pot was suspended in. Crab spent less than 10 seconds exposed to outside air temperatures, which ranged from -35 to +35 F. Pots were then rebated, and placed back into hole. Crab pots were checked twice each week on non adjacent days and when weather cooperated.

## RESULTS

### Test Fishing

A total of 1,283 male and 8 female red king crab were captured at the four stations between January 1 and April 23, 1991. A total of 56 pots were lifted and the average catch per pot lift was 22.9 male, and 0.1 female crab (Table 1). The average catch per pot lift by station was; 25.7 crab/pot at station W1, 27.4 crab/pot at station W2, 21.9 crab/pot at station N2, and 17.6 crab/pot at station N3 (Table 2). Daily catch for each station is found in Appendix Tables 1-4. Hog ring tags were attached to 672 healthy male crab with a carapace length greater than 89 mm. These tags are used to track movements and growth of male king crab. This data is collected as crab are returned to the Nome office. Growth per molt, frequency of molts and crab movement are all important considerations in the management of this population.

## Catch Sampling

Carapace age and length measurements were taken from 1,283 male king crab of which 36% were sublegals and 64% legals. Of the total male crab catch, 5% were prerecruit twos, 30% were prerecruit ones, 34% were recruits, and 31% were postrecruits (Table 3, Figure 3). The average carapace length of all male crab measured was 105 mm.

Out of 826 legal male crab measured, 52% were recruits and 48% were post recruit crab. The average carapace length of legal male crab was 114 mm (Table 4). A total of 457 sublegal male crab were measured, of which 14% were prerecruit twos, and 86% were prerecruit ones. The average carapace length for sublegal male crab was 96 mm (Table 5).

Eight female king crab were captured during the study, making up 0.6% of the total catch. Carapace length measurements, age, percent fullness of the egg clutch, and egg stage were measured and recorded (Table 6). Two of the female crab were juvenile (no eggs), 5 female crab had uneyed eggs (purple), and 1 crab had eyed eggs. Percent clutch size ranged from 1-2% to 80% full. The average carapace length for female crab captured was 75 mm (Table 6).

## DISCUSSION

The 1991 winter crab study had an average catch rate higher than the catch rate of 1986, 1987, 1989, and 1990, but lower than the catch rate in 1983, 1984 and 1985 (Table 7). The total number of male crab caught and pot lifts were less than the number caught and pot lifts during the 1990 study (1283 male crab in 1991, 2076 male crab in 1990). The sublegal catch rate decreased from the previous seven winter studies (Table 8). Only 5% of the catch were prerecruit twos, well below the average of 24% for the years 1983 to 1990 (Table 8). This may indicate a low prerecruit one population in 1992, and low recruit population in 1993. Prerecruit ones made up 30% of the male catch, compared to an average of 33% for the years 1983 to 1990. The recruit and post recruit catch were above the average of the previous seven years. Recruits made up 34% of the male catch, the largest percentage of recruits seen in the winter crab study. A higher than average prerecruit twos catch in 1989 and prerecruit ones catch in 1990 indicated that recruits would be up in 1991.

The number of pots lifted at the four stations fished were 13 each at W1 and W2, and 15 each at N2 and N3 (Table 2). Station W2 had the highest average male catch per pot lift (27.4 male crab), and the highest number of males captured at any station (356 male crab). During the 1990 winter crab study, station E2 had the

largest average male catch per pot lift (27.2 male crab) and station N2 had the greatest number of males captured (455 male crab).

Table 9 compares the legal crab size composition of the winter and summer fisheries. Generally the two harvests trend together and provide a predictor of the size of the crab to be harvested during the summer season. This index has yet to be fully developed as a management tool.

The average carapace length for all male crab measured was 105 mm. This average length is similar to previous winter crab studies (104 mm in 1990, 105 mm in 1989, and 104 mm in 1987). The average carapace length for legal male crab was 114 mm, compared to 115 mm in 1990's winter crab study (Table 10). Average carapace length for sublegal male crab was 96 mm compared to 92 mm for sublegal male crab in the 1990 winter study.

A total of 8 female crab were captured during the 1991 winter study. This low catch rate is similar to that seen in 1987 (6 females) and 1989 (9 females). In 1990, 18 female crab were captured. The average carapace length of the female crab measured in 1991 was 75 mm, compared to 83 mm in 1990, 79 mm in 1989, and 71 mm in 1987 (Table 10).

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Table 1. Norton Sound winter king crab study, 1991. Daily catch totals for all stations combined (W1, W2, N2, N3).

| Date  | No.<br>pots<br>lifted | No.<br>males<br>captured | No.<br>females<br>captured | Avg. male<br>catch per<br>pot lift | Cum<br>males<br>captured | Cum avg.<br>per pot |
|-------|-----------------------|--------------------------|----------------------------|------------------------------------|--------------------------|---------------------|
| 01/29 | 1                     | 13                       | 0                          | 13.0                               | 13                       | 13.0                |
| 02/11 | 2                     | 54                       | 1                          | 27.0                               | 67                       | 22.3                |
| 02/12 | 2                     | 72                       | 0                          | 36.0                               | 139                      | 27.8                |
| 02/15 | 4                     | 68                       | 1                          | 17.0                               | 207                      | 23.0                |
| 02/25 | 1                     | 34                       | 0                          | 34.0                               | 241                      | 24.1                |
| 02/28 | 3                     | 113                      | 0                          | 37.7                               | 354                      | 27.2                |
| 03/05 | 4                     | 63                       | 0                          | 15.8                               | 417                      | 24.5                |
| 03/08 | 4                     | 108                      | 1                          | 27.0                               | 525                      | 25.0                |
| 03/12 | 4                     | 113                      | 0                          | 28.3                               | 638                      | 25.5                |
| 03/18 | 4                     | 134                      | 2                          | 33.5                               | 772                      | 26.6                |
| 03/28 | 1                     | 20                       | 0                          | 20.0                               | 792                      | 26.4                |
| 04/02 | 4                     | 144                      | 0                          | 36.0                               | 936                      | 27.5                |
| 04/05 | 4                     | 70                       | 0                          | 17.5                               | 1006                     | 26.5                |
| 04/08 | 4                     | 52                       | 0                          | 13.0                               | 1058                     | 25.2                |
| 04/12 | 2                     | 23                       | 1                          | 11.5                               | 1081                     | 24.6                |
| 04/16 | 4                     | 84                       | 2                          | 21.0                               | 1165                     | 24.3                |
| 04/19 | 4                     | 50                       | 0                          | 12.5                               | 1215                     | 23.4                |
| 4/23  | 4                     | 68                       | 0                          | 17.0                               | 1283                     | 22.9                |
| Total | 56                    | 1,283                    | 8                          | 22.9                               | 1,283                    | 22.9                |

Table 2. Norton Sound winter king crab study, 1991. Catch by station.

| Station | No.<br>pot<br>lifts | No.<br>males<br>captured | Avg. male<br>catch per<br>pot lift | No.<br>females<br>captured | Avg. female<br>catch per<br>pot lift |
|---------|---------------------|--------------------------|------------------------------------|----------------------------|--------------------------------------|
| W1      | 13                  | 334                      | 25.7                               | 0                          | 0                                    |
| W2      | 13                  | 356                      | 27.4                               | 3                          | 0.2                                  |
| N2      | 15                  | 329                      | 21.9                               | 4                          | 0.3                                  |
| N3      | 15                  | 264                      | 17.6                               | 1                          | 0.1                                  |
| Total   | 56                  | 1283                     | 22.9                               | 8                          | 0.1                                  |

Table 3. Size frequency distribution of male crab captured at all fishing stations during the winter king crab study, Norton Sound, 1991.

| CARA =<br>PACE<br>LTH.<br>(mm) | PRE-RECRUIT<br>(Sublegal) |        | RECRUIT |        | POST-RECRUIT |        | TOTALS |         |
|--------------------------------|---------------------------|--------|---------|--------|--------------|--------|--------|---------|
|                                | No.                       | %      | No.     | %      | No.          | %      | No.    | %       |
| 50                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 51                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 52                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 53                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 54                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 55                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 56                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 57                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 58                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 59                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 60                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 61                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 62                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 63                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 64                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 65                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 66                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 67                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 68                             | 1                         | 0.06%  |         | 0.00%  |              | 0.00%  | 1      | 0.06%   |
| 69                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 70                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 71                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 72                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 73                             | 1                         | 0.06%  |         | 0.00%  |              | 0.00%  | 1      | 0.06%   |
| 74                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 75                             | 1                         | 0.06%  |         | 0.00%  |              | 0.00%  | 1      | 0.06%   |
| 76                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 77                             | 5                         | 0.36%  |         | 0.00%  |              | 0.00%  | 5      | 0.36%   |
| 78                             | 4                         | 0.31%  |         | 0.00%  |              | 0.00%  | 4      | 0.31%   |
| 79                             | 1                         | 0.06%  |         | 0.00%  |              | 0.00%  | 1      | 0.06%   |
| 80                             | 2                         | 0.16%  |         | 0.00%  |              | 0.00%  | 2      | 0.16%   |
| 81                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 82                             |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 83                             | 3                         | 0.23%  |         | 0.00%  |              | 0.00%  | 3      | 0.23%   |
| 84                             | 2                         | 0.16%  |         | 0.00%  |              | 0.00%  | 2      | 0.16%   |
| 85                             | 8                         | 0.47%  |         | 0.00%  |              | 0.00%  | 8      | 0.47%   |
| 86                             | 9                         | 0.70%  |         | 0.00%  |              | 0.00%  | 9      | 0.70%   |
| 87                             | 8                         | 0.62%  |         | 0.00%  |              | 0.00%  | 8      | 0.62%   |
| 88                             | 11                        | 0.68%  |         | 0.00%  |              | 0.00%  | 11     | 0.68%   |
| 89                             | 10                        | 0.78%  |         | 0.00%  |              | 0.00%  | 10     | 0.78%   |
| 90                             | 12                        | 0.94%  |         | 0.00%  |              | 0.00%  | 12     | 0.94%   |
| 91                             | 18                        | 1.25%  |         | 0.00%  |              | 0.00%  | 18     | 1.25%   |
| 92                             | 18                        | 1.40%  |         | 0.00%  |              | 0.00%  | 18     | 1.40%   |
| 93                             | 26                        | 2.03%  |         | 0.00%  |              | 0.00%  | 26     | 2.03%   |
| 94                             | 26                        | 2.03%  |         | 0.00%  |              | 0.00%  | 26     | 2.03%   |
| 95                             | 25                        | 1.95%  |         | 0.00%  |              | 0.00%  | 25     | 1.95%   |
| 96                             | 35                        | 2.73%  |         | 0.00%  |              | 0.00%  | 35     | 2.73%   |
| 97                             | 38                        | 2.61%  | 1       | 0.08%  |              | 0.00%  | 37     | 2.65%   |
| 98                             | 29                        | 2.29%  | 1       | 0.08%  |              | 0.00%  | 30     | 2.34%   |
| 99                             | 43                        | 3.35%  | 2       | 0.16%  |              | 0.00%  | 45     | 3.51%   |
| 100                            | 42                        | 3.27%  | 11      | 0.86%  |              | 0.00%  | 53     | 4.13%   |
| 101                            | 22                        | 1.71%  | 9       | 0.70%  |              | 0.00%  | 31     | 2.42%   |
| 102                            | 29                        | 2.28%  | 23      | 1.78%  |              | 0.00%  | 52     | 4.05%   |
| 103                            | 12                        | 0.94%  | 21      | 1.64%  | 4            | 0.31%  | 37     | 2.88%   |
| 104                            | 8                         | 0.62%  | 32      | 2.46%  |              | 0.00%  | 40     | 3.12%   |
| 105                            | 8                         | 0.62%  | 28      | 2.16%  | 1            | 0.08%  | 37     | 2.88%   |
| 106                            | 4                         | 0.31%  | 45      | 3.51%  | 2            | 0.16%  | 51     | 3.98%   |
| 107                            | 1                         | 0.08%  | 41      | 3.20%  | 5            | 0.39%  | 47     | 3.69%   |
| 108                            | 1                         | 0.08%  | 30      | 2.34%  | 2            | 0.16%  | 33     | 2.57%   |
| 109                            |                           | 0.00%  | 33      | 2.57%  | 1            | 0.08%  | 34     | 2.65%   |
| 110                            |                           | 0.00%  | 32      | 2.49%  | 7            | 0.55%  | 39     | 3.04%   |
| 111                            |                           | 0.00%  | 34      | 2.65%  | 2            | 0.16%  | 36     | 2.81%   |
| 112                            |                           | 0.00%  | 22      | 1.71%  | 4            | 0.31%  | 26     | 2.03%   |
| 113                            |                           | 0.00%  | 24      | 1.87%  | 10           | 0.78%  | 34     | 2.65%   |
| 114                            |                           | 0.00%  | 22      | 1.71%  | 14           | 1.09%  | 36     | 2.81%   |
| 115                            |                           | 0.00%  | 19      | 1.48%  | 7            | 0.55%  | 26     | 2.03%   |
| 116                            |                           | 0.00%  |         | 0.00%  | 33           | 2.57%  | 33     | 2.57%   |
| 117                            |                           | 0.00%  |         | 0.00%  | 23           | 1.79%  | 23     | 1.79%   |
| 118                            |                           | 0.00%  |         | 0.00%  | 31           | 2.42%  | 31     | 2.42%   |
| 119                            |                           | 0.00%  |         | 0.00%  | 29           | 2.28%  | 29     | 2.28%   |
| 120                            |                           | 0.00%  |         | 0.00%  | 22           | 1.71%  | 22     | 1.71%   |
| 121                            |                           | 0.00%  |         | 0.00%  | 32           | 2.49%  | 32     | 2.49%   |
| 122                            |                           | 0.00%  |         | 0.00%  | 22           | 1.71%  | 22     | 1.71%   |
| 123                            |                           | 0.00%  |         | 0.00%  | 18           | 1.40%  | 18     | 1.40%   |
| 124                            |                           | 0.00%  |         | 0.00%  | 14           | 1.09%  | 14     | 1.09%   |
| 125                            |                           | 0.00%  |         | 0.00%  | 18           | 1.25%  | 18     | 1.25%   |
| 126                            |                           | 0.00%  |         | 0.00%  | 12           | 0.94%  | 12     | 0.94%   |
| 127                            |                           | 0.00%  |         | 0.00%  | 15           | 1.17%  | 15     | 1.17%   |
| 128                            |                           | 0.00%  |         | 0.00%  | 9            | 0.70%  | 9      | 0.70%   |
| 129                            |                           | 0.00%  |         | 0.00%  | 14           | 1.09%  | 14     | 1.09%   |
| 130                            |                           | 0.00%  |         | 0.00%  | 9            | 0.70%  | 9      | 0.70%   |
| 131                            |                           | 0.00%  |         | 0.00%  | 2            | 0.16%  | 2      | 0.16%   |
| 132                            |                           | 0.00%  |         | 0.00%  | 5            | 0.39%  | 5      | 0.39%   |
| 133                            |                           | 0.00%  |         | 0.00%  | 9            | 0.70%  | 9      | 0.70%   |
| 134                            |                           | 0.00%  |         | 0.00%  | 4            | 0.31%  | 4      | 0.31%   |
| 135                            |                           | 0.00%  |         | 0.00%  | 1            | 0.08%  | 1      | 0.08%   |
| 136                            |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 137                            |                           | 0.00%  |         | 0.00%  | 7            | 0.55%  | 7      | 0.55%   |
| 138                            |                           | 0.00%  |         | 0.00%  | 3            | 0.23%  | 3      | 0.23%   |
| 139                            |                           | 0.00%  |         | 0.00%  | 2            | 0.16%  | 2      | 0.16%   |
| 140                            |                           | 0.00%  |         | 0.00%  | 2            | 0.16%  | 2      | 0.16%   |
| 141                            |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 142                            |                           | 0.00%  |         | 0.00%  | 1            | 0.08%  | 1      | 0.08%   |
| 143                            |                           | 0.00%  |         | 0.00%  | 1            | 0.08%  | 1      | 0.08%   |
| 144                            |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 145                            |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 146                            |                           | 0.00%  |         | 0.00%  | 1            | 0.08%  | 1      | 0.08%   |
| 147                            |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 148                            |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| 149                            |                           | 0.00%  |         | 0.00%  |              | 0.00%  | 0      | 0.00%   |
| Total No.                      | 457                       | 35.62% | 430     | 33.52% | 366          | 30.87% | 1283   | 100.00% |

number of pre-recruit males (<=89mm) = 64  
number of pre-recruit ones (>=90mm) = 393

Table 4. Carapace length measurement summary of legal male red king crab captured during the Norton Sound winter crab study, 1991.

| Carapace Length (mm) | New shell |            |       | Old shell |            |       | Total |            |       |
|----------------------|-----------|------------|-------|-----------|------------|-------|-------|------------|-------|
|                      | No.       | Ave Length | %     | No.       | Ave Length | %     | No.   | Ave Length | %     |
| 97                   | 1         | 0.18       | 0.2%  |           | 0.00       | 0.0%  | 1     | 0.12       | 0.1%  |
| 98                   | 1         | 0.19       | 0.2%  |           | 0.00       | 0.0%  | 1     | 0.12       | 0.1%  |
| 99                   | 2         | 0.38       | 0.4%  |           | 0.00       | 0.0%  | 2     | 0.24       | 0.2%  |
| 100                  | 11        | 2.09       | 2.1%  |           | 0.00       | 0.0%  | 11    | 1.33       | 1.3%  |
| 101                  | 9         | 1.73       | 1.7%  |           | 0.00       | 0.0%  | 9     | 1.10       | 1.1%  |
| 102                  | 23        | 4.45       | 4.4%  |           | 0.00       | 0.0%  | 23    | 2.84       | 2.8%  |
| 103                  | 21        | 4.11       | 4.0%  | 4         | 1.37       | 1.3%  | 25    | 3.12       | 3.0%  |
| 104                  | 32        | 6.33       | 6.1%  |           | 0.00       | 0.0%  | 32    | 4.03       | 3.9%  |
| 105                  | 28        | 5.59       | 5.3%  | 1         | 0.35       | 0.3%  | 29    | 3.69       | 3.6%  |
| 106                  | 45        | 9.07       | 8.6%  | 2         | 0.71       | 0.7%  | 47    | 8.03       | 5.7%  |
| 107                  | 41        | 8.34       | 7.8%  | 5         | 1.78       | 1.7%  | 46    | 5.90       | 5.6%  |
| 108                  | 30        | 6.16       | 5.7%  | 2         | 0.72       | 0.7%  | 32    | 4.18       | 3.9%  |
| 109                  | 33        | 6.84       | 6.3%  | 1         | 0.36       | 0.3%  | 34    | 4.49       | 4.1%  |
| 110                  | 32        | 6.69       | 6.1%  | 7         | 2.57       | 2.3%  | 39    | 5.19       | 4.7%  |
| 111                  | 34        | 7.17       | 6.5%  | 2         | 0.74       | 0.7%  | 36    | 4.84       | 4.4%  |
| 112                  | 22        | 4.68       | 4.2%  | 4         | 1.49       | 1.3%  | 26    | 3.53       | 3.1%  |
| 113                  | 24        | 5.16       | 4.6%  | 10        | 3.77       | 3.3%  | 34    | 4.65       | 4.1%  |
| 114                  | 22        | 4.77       | 4.2%  | 14        | 5.32       | 4.7%  | 36    | 4.97       | 4.4%  |
| 115                  | 19        | 4.15       | 3.6%  | 7         | 2.68       | 2.3%  | 26    | 3.62       | 3.1%  |
| 116                  | 22        | 4.85       | 4.2%  | 11        | 4.25       | 3.7%  | 33    | 4.63       | 4.0%  |
| 117                  | 8         | 1.78       | 1.5%  | 15        | 5.85       | 5.0%  | 23    | 3.26       | 2.8%  |
| 118                  | 17        | 3.81       | 3.2%  | 14        | 5.51       | 4.7%  | 31    | 4.43       | 3.8%  |
| 119                  | 14        | 3.17       | 2.7%  | 15        | 5.65       | 5.0%  | 29    | 4.18       | 3.5%  |
| 120                  | 5         | 1.14       | 1.0%  | 17        | 6.80       | 5.7%  | 22    | 3.20       | 2.7%  |
| 121                  | 8         | 1.84       | 1.5%  | 24        | 9.88       | 8.0%  | 32    | 4.69       | 3.9%  |
| 122                  | 5         | 1.16       | 1.0%  | 17        | 6.91       | 5.7%  | 22    | 3.25       | 2.7%  |
| 123                  | 3         | 0.70       | 0.6%  | 15        | 6.15       | 5.0%  | 18    | 2.68       | 2.2%  |
| 124                  |           | 0.00       | 0.0%  | 14        | 5.79       | 4.7%  | 14    | 2.10       | 1.7%  |
| 125                  | 3         | 0.71       | 0.6%  | 13        | 5.42       | 4.3%  | 16    | 2.42       | 1.9%  |
| 126                  | 1         | 0.24       | 0.2%  | 11        | 4.62       | 3.7%  | 12    | 1.83       | 1.5%  |
| 127                  | 2         | 0.48       | 0.4%  | 13        | 5.50       | 4.3%  | 15    | 2.31       | 1.8%  |
| 128                  | 3         | 0.73       | 0.6%  | 6         | 2.56       | 2.0%  | 9     | 1.39       | 1.1%  |
| 129                  | 2         | 0.49       | 0.4%  | 12        | 5.16       | 4.0%  | 14    | 2.19       | 1.7%  |
| 130                  |           | 0.00       | 0.0%  | 9         | 3.90       | 3.0%  | 9     | 1.42       | 1.1%  |
| 131                  |           | 0.00       | 0.0%  | 2         | 0.87       | 0.7%  | 2     | 0.32       | 0.2%  |
| 132                  |           | 0.00       | 0.0%  | 5         | 2.20       | 1.7%  | 5     | 0.80       | 0.6%  |
| 133                  | 2         | 0.51       | 0.4%  | 7         | 3.10       | 2.3%  | 9     | 1.45       | 1.1%  |
| 134                  |           | 0.00       | 0.0%  | 4         | 1.79       | 1.3%  | 4     | 0.65       | 0.5%  |
| 135                  |           | 0.00       | 0.0%  | 1         | 0.45       | 0.3%  | 1     | 0.16       | 0.1%  |
| 136                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 137                  | 1         | 0.28       | 0.2%  | 6         | 2.74       | 2.0%  | 7     | 1.16       | 0.8%  |
| 138                  |           | 0.00       | 0.0%  | 3         | 1.38       | 1.0%  | 3     | 0.50       | 0.4%  |
| 139                  |           | 0.00       | 0.0%  | 2         | 0.93       | 0.7%  | 2     | 0.34       | 0.2%  |
| 140                  |           | 0.00       | 0.0%  | 2         | 0.93       | 0.7%  | 2     | 0.34       | 0.2%  |
| 141                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 142                  |           | 0.00       | 0.0%  | 1         | 0.47       | 0.3%  | 1     | 0.17       | 0.1%  |
| 143                  |           | 0.00       | 0.0%  | 1         | 0.48       | 0.3%  | 1     | 0.17       | 0.1%  |
| 144                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 145                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 146                  |           | 0.00       | 0.0%  | 1         | 0.49       | 0.3%  | 1     | 0.18       | 0.1%  |
| 147                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 148                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 149                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 150                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 151                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 152                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 153                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 154                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 155                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 156                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 157                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 158                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 159                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 160                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 161                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 162                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 163                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 164                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| 165                  |           | 0.00       | 0.0%  |           | 0.00       | 0.0%  | 0     | 0.00       | 0.0%  |
| Total No.            | 526       |            | 63.7% | 300       |            | 38.3% | 826   |            | 99.9% |
| Mean                 |           | 110.0      |       |           | 121.7      |       |       | 114.2      |       |
| Total legal          |           |            | 826   |           |            |       |       |            |       |
| Total Recruits       |           |            | 430   |           |            |       |       |            |       |
| Percent              |           |            | 52.1% |           |            |       |       |            |       |
| Total Post Recruits  |           |            | 396   |           |            |       |       |            |       |
| Percent              |           |            | 47.9% |           |            |       |       |            |       |



Table 5. Carapace length measurement summary of sublegal male red king crab captured during the Norton Sound winter crab study, 1991.

| Carapace Length (mm) | New Shell |                 |       | Old Shell |                 |        | Total |                 |        |
|----------------------|-----------|-----------------|-------|-----------|-----------------|--------|-------|-----------------|--------|
|                      | No.       | Ave Length Calc | %     | No.       | Ave Length Calc | %      | No.   | Ave Length Calc | %      |
| 52                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 56                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 57                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 58                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 59                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 60                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 61                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 62                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 63                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 64                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 65                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 66                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 67                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 68                   | 1         | 0.15            | 0.2%  |           | 0.00            | 0.0%   | 1     | 0.15            | 0.2%   |
| 69                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 70                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 71                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 72                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 73                   | 1         | 0.16            | 0.2%  |           | 0.00            | 0.0%   | 1     | 0.16            | 0.2%   |
| 74                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 75                   | 1         | 0.16            | 0.2%  |           | 0.00            | 0.0%   | 1     | 0.18            | 0.2%   |
| 76                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 77                   | 5         | 0.84            | 1.1%  |           | 0.00            | 0.0%   | 5     | 0.84            | 1.1%   |
| 78                   | 4         | 0.68            | 0.9%  |           | 0.00            | 0.0%   | 4     | 0.68            | 0.9%   |
| 79                   | 1         | 0.17            | 0.2%  |           | 0.00            | 0.0%   | 1     | 0.17            | 0.2%   |
| 80                   | 2         | 0.35            | 0.4%  |           | 0.00            | 0.0%   | 2     | 0.35            | 0.4%   |
| 81                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 82                   |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 83                   | 3         | 0.55            | 0.7%  |           | 0.00            | 0.0%   | 3     | 0.54            | 0.7%   |
| 84                   | 2         | 0.37            | 0.4%  |           | 0.00            | 0.0%   | 2     | 0.37            | 0.4%   |
| 85                   | 8         | 1.12            | 1.3%  |           | 0.00            | 0.0%   | 6     | 1.12            | 1.3%   |
| 86                   | 9         | 1.70            | 2.0%  |           | 0.00            | 0.0%   | 9     | 1.69            | 2.0%   |
| 87                   | 8         | 1.53            | 1.8%  |           | 0.00            | 0.0%   | 8     | 1.52            | 1.8%   |
| 88                   | 11        | 2.12            | 2.4%  |           | 0.00            | 0.0%   | 11    | 2.12            | 2.4%   |
| 89                   | 10        | 1.95            | 2.2%  |           | 0.00            | 0.0%   | 10    | 1.95            | 2.2%   |
| 90                   | 12        | 2.37            | 2.6%  |           | 0.00            | 0.0%   | 12    | 2.36            | 2.6%   |
| 91                   | 16        | 3.19            | 3.5%  |           | 0.00            | 0.0%   | 16    | 3.19            | 3.5%   |
| 92                   | 18        | 3.63            | 3.9%  |           | 0.00            | 0.0%   | 18    | 3.62            | 3.9%   |
| 93                   | 26        | 5.30            | 5.7%  |           | 0.00            | 0.0%   | 26    | 5.29            | 5.7%   |
| 94                   | 26        | 5.38            | 5.7%  |           | 0.00            | 0.0%   | 26    | 5.35            | 5.7%   |
| 95                   | 25        | 5.21            | 5.5%  |           | 0.00            | 0.0%   | 25    | 5.20            | 5.5%   |
| 96                   | 35        | 7.37            | 7.7%  |           | 0.00            | 0.0%   | 35    | 7.35            | 7.7%   |
| 97                   | 36        | 7.66            | 7.9%  |           | 0.00            | 0.0%   | 36    | 7.64            | 7.9%   |
| 98                   | 29        | 8.23            | 8.4%  |           | 0.00            | 0.0%   | 29    | 8.22            | 8.3%   |
| 99                   | 43        | 9.34            | 9.4%  |           | 0.00            | 0.0%   | 43    | 9.32            | 9.4%   |
| 100                  | 42        | 9.21            | 9.2%  |           | 0.00            | 0.0%   | 42    | 9.19            | 9.2%   |
| 101                  | 22        | 4.87            | 4.8%  |           | 0.00            | 0.0%   | 22    | 4.86            | 4.8%   |
| 102                  | 28        | 6.28            | 6.1%  | 1         | 102.00          | 100.0% | 29    | 6.47            | 6.3%   |
| 103                  | 12        | 2.71            | 2.6%  |           | 0.00            | 0.0%   | 12    | 2.70            | 2.6%   |
| 104                  | 8         | 1.82            | 1.8%  |           | 0.00            | 0.0%   | 8     | 1.82            | 1.8%   |
| 105                  | 8         | 1.84            | 1.8%  |           | 0.00            | 0.0%   | 8     | 1.84            | 1.8%   |
| 106                  | 4         | 0.93            | 0.9%  |           | 0.00            | 0.0%   | 4     | 0.93            | 0.9%   |
| 107                  | 1         | 0.23            | 0.2%  |           | 0.00            | 0.0%   | 1     | 0.23            | 0.2%   |
| 108                  | 1         | 0.24            | 0.2%  |           | 0.00            | 0.0%   | 1     | 0.24            | 0.2%   |
| 109                  |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 110                  |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 111                  |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 112                  |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| 113                  |           | 0.00            | 0.0%  |           | 0.00            | 0.0%   | 0     | 0.00            | 0.0%   |
| sum                  | 456       |                 | 99.8% | 1         |                 | 0.2%   | 457   |                 | 100.0% |
| Mean                 |           | 95.6            |       |           | 102.0           |        |       | 95.7            |        |
| Total sublegals      | 457       |                 |       |           |                 |        |       |                 |        |

Table 6. Norton Sound winter king crab study, 1991.  
Egg development and size of female crab.

| Date  | Station | Carapace<br>length (mm) | Clutch size (%) | Comments    |
|-------|---------|-------------------------|-----------------|-------------|
| 02/11 | N2      | 81                      | 80              | eyed eggs   |
| 02/15 | W2      | 73                      | 50              | uneyed eggs |
| 03/08 | W2      | 86                      | 50              | uneyed eggs |
| 03/18 | N2      | 79                      | 20              | uneyed eggs |
| 03/18 | W2      | 74                      | 60              | uneyed eggs |
| 04/12 | N2      | 71                      | 0               | juvenile    |
| 04/16 | N2      | 62                      | 0               | juvenile    |
| 04/16 | N3      | 73                      | 1-2             | uneyed eggs |

Avg. carapace length: 75 mm

Table 7. Norton Sound winter king crab study, 1991. Comparison of winter king crab study catches by year, 1982–1991.

| Year              | No. pot lifts | No. Males captured | Av. Male catch per pot lift | No. females captured | Av. Female catch per pot lift |
|-------------------|---------------|--------------------|-----------------------------|----------------------|-------------------------------|
| 1982 <sup>a</sup> | 60            | 246                | 4.1                         | 10                   | 0.2                           |
| 1983              | 107           | 2586               | 24.0                        | 236                  | 2.0                           |
| 1984              | 70            | 1677               | 24.0                        | 78                   | 1.1                           |
| 1985              | 31            | 760                | 24.5                        | 14                   | 0.5                           |
| 1986              | 31            | 594                | 19.2                        | 74                   | 2.4                           |
| 1987              | 26            | 151                | 5.8                         | 6                    | 0.2                           |
| 1988 <sup>b</sup> |               |                    |                             |                      |                               |
| 1989              | 42            | 548                | 13.1                        | 9                    | 0.2                           |
| 1990              | 99            | 2076               | 21.0                        | 18                   | 0.2                           |
| 1991              | 56            | 1283               | 22.9                        | 8                    | 0.1                           |

<sup>a</sup> Fishing stations and baiting techniques were not standardized.

<sup>b</sup> No data for 1988 due to unstable ice conditions.

Table 8. Norton Sound winter king crab study, 1991. Comparison of percent prerecruits, recruits, and postrecruits by year, 1983–1991.

| Year                | Sublegal<br>prerecruit |             |              | Legal           |                     |              |
|---------------------|------------------------|-------------|--------------|-----------------|---------------------|--------------|
|                     | twos<br>(%)            | ones<br>(%) | total<br>(%) | recruits<br>(%) | postrecruits<br>(%) | total<br>(%) |
| 1983                | 26                     | 38          | 64           | 26              | 10                  | 36           |
| 1984                | 35                     | 31          | 66           | 19              | 16                  | 35           |
| 1985                | 25                     | 45          | 70           | 20              | 10                  | 30           |
| 1986                | 26                     | 35          | 61           | 22              | 17                  | 39           |
| 1987                | 13                     | 31          | 44           | 10              | 46                  | 56           |
| 1988 <sup>a</sup>   |                        |             |              |                 |                     |              |
| 1989                | 27                     | 15          | 42           | 27              | 31                  | 58           |
| 1990                | 16                     | 33          | 49           | 25              | 26                  | 51           |
| 1991                | 5                      | 30          | 35           | 34              | 31                  | 65           |
| Avg. %<br>1983–1990 | 24                     | 33          |              | 21              | 22                  |              |

<sup>a</sup> No data collected in winter 1988 due to unstable ice conditions.

Table 9. Comparison of percent recruit and postrecruit king crab sampled from summer commercial fishery and winter crab study, Norton Sound, 1983 – 1991.

| Year              | Winter Study |                  | Summer Commercial |                  |
|-------------------|--------------|------------------|-------------------|------------------|
|                   | Recruits (%) | Postrecruits (%) | Recruits (%)      | Postrecruits (%) |
| 1983              | 73           | 27               | 55                | 45               |
| 1984              | 54           | 46               | 59                | 41               |
| 1985              | 68           | 32               | 45                | 55               |
| 1986              | 55           | 45               | 48                | 52               |
| 1987              | 20           | 80               | 22                | 78               |
| 1988 <sup>a</sup> | —            | —                | 25                | 75               |
| 1989              | 47           | 53               | 23                | 77               |
| 1990              | 49           | 51               | 21                | 79               |
| 1991 <sup>b</sup> | 52           | 48               | —                 | —                |

<sup>a</sup> No data collected in winter 1988 due to unstable ice conditions.

<sup>b</sup> No data collected in summer 1991 due to closed fishery.

Table 10. Norton Sound winter king crab study, 1991. Comparison of average carapace lengths for female and male king crab captured, by year, 1983 to 1991.

| Year              | Avg. length of<br>all male crab (mm) | Avg. length of<br>legal male crab (mm) | Avg. length of<br>female crab (mm) |
|-------------------|--------------------------------------|--|------------------------------------|
| 1983              | 98                                   | b                                      | b                                  |
| 1984              | 94                                   | b                                      | b                                  |
| 1985              | 97                                   | b                                      | 79                                 |
| 1986              | 97                                   | b                                      | 70                                 |
| 1987              | 104                                  | b                                      | 71                                 |
| 1988 <sup>a</sup> |                                      |  |                                    |
| 1989              | 105                                  | b                                      | 79                                 |
| 1990              | 104                                  | 115                                    | 83                                 |
| 1991              | 105                                  | 114                                    | 75                                 |

<sup>a</sup> No data collected in winter 1988 due to unstable ice conditions.

<sup>b</sup> Information not available

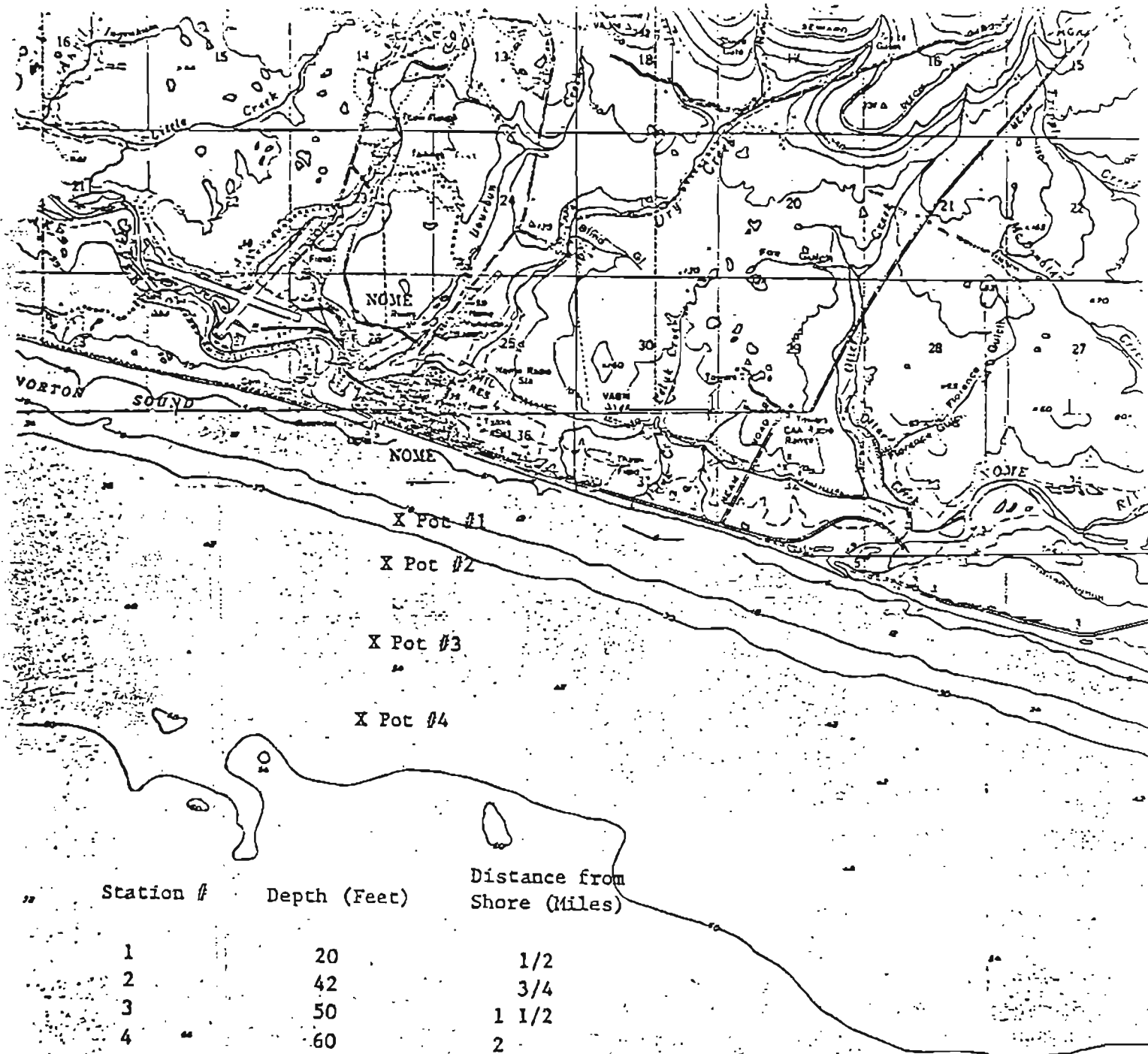


Figure 1. Winter king crab study area and pot locations, Norton Sound Section, 1983-1987.

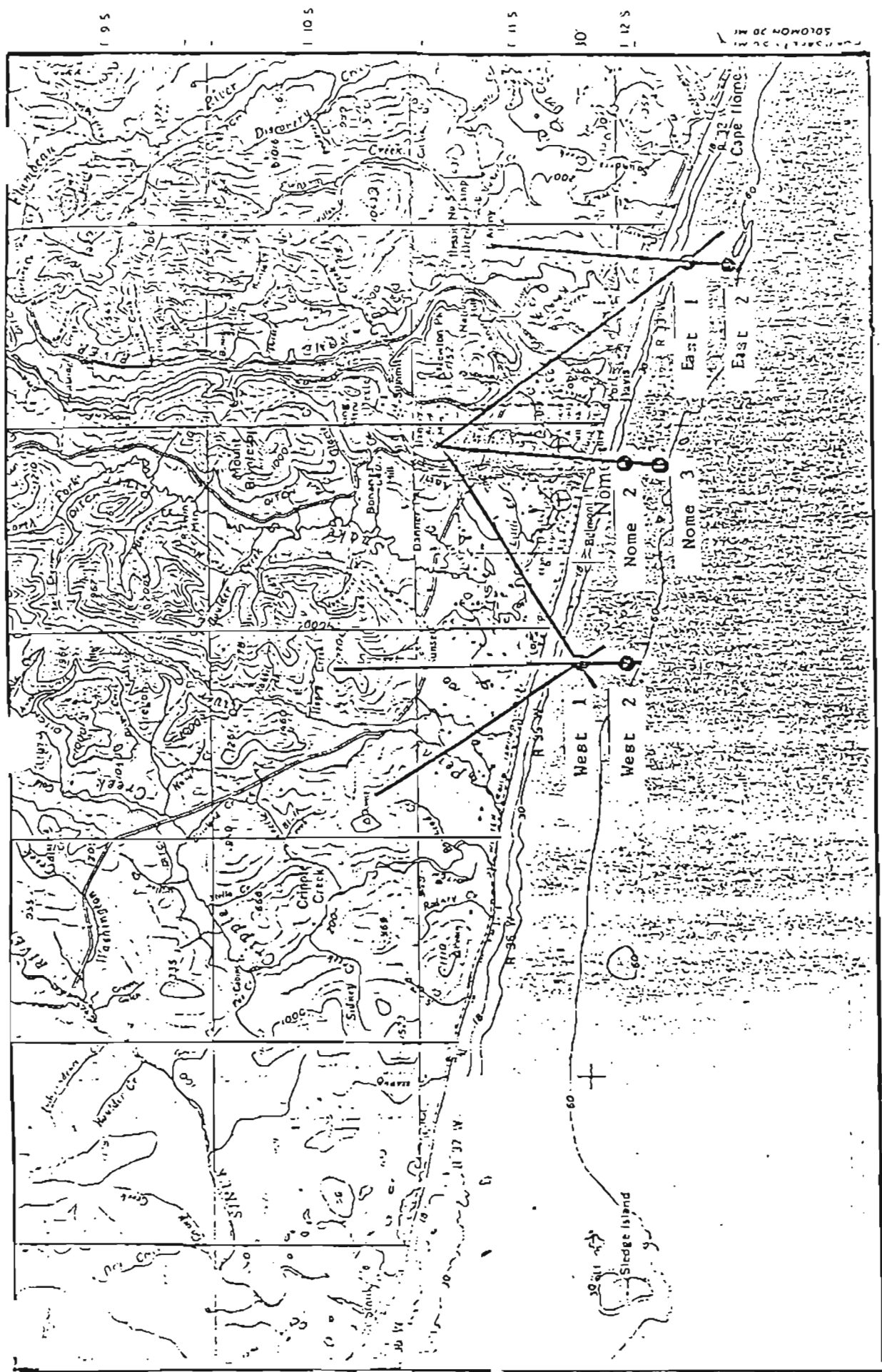


Figure 2. Winter king crab study area and pot locations, Norton Sound Section, 1990.



## Norton Sound Red King Crab

Winter 1991

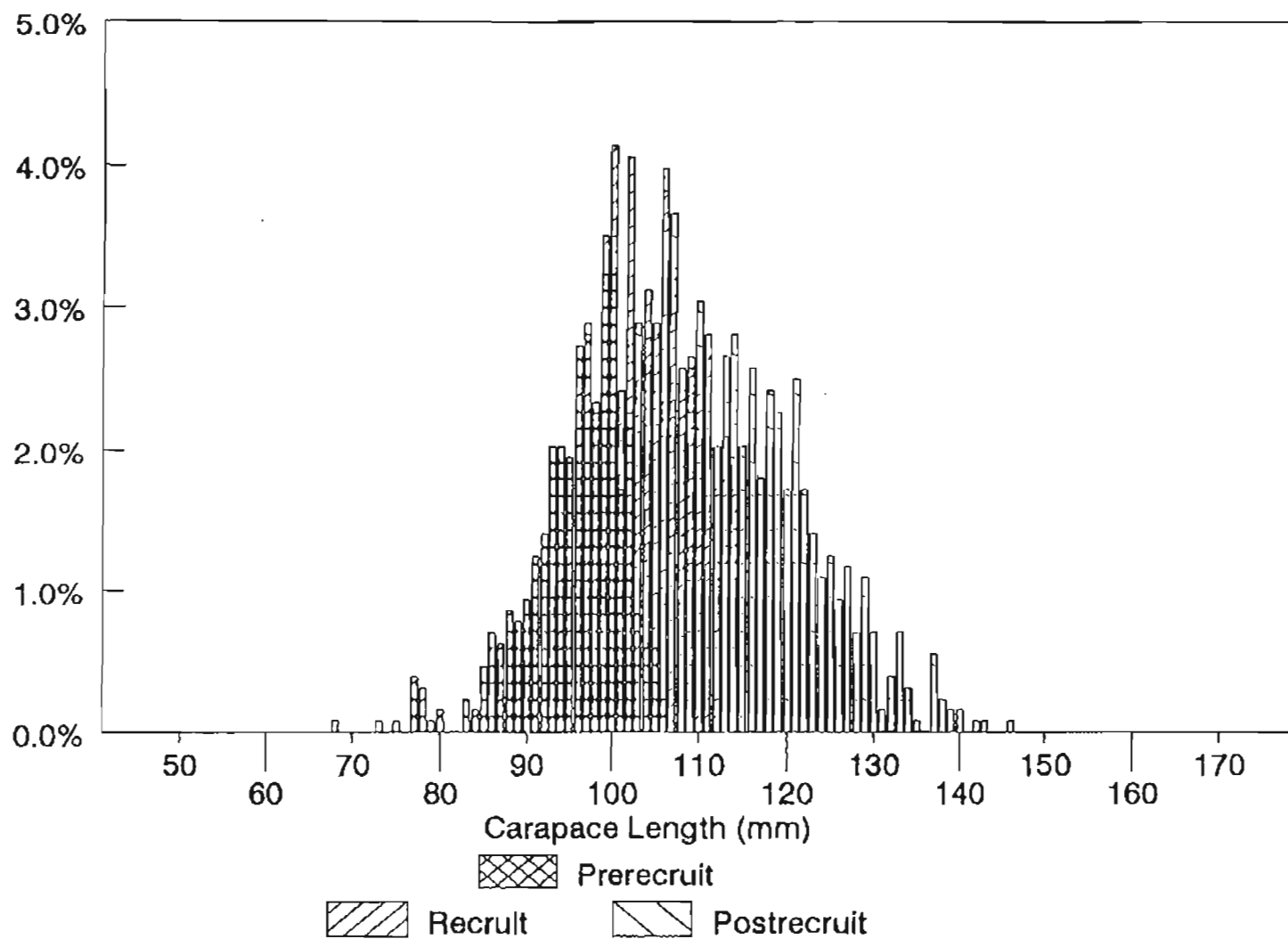


Figure 3. Length frequency distribution of prerecruit, recruit, and postrecruit male red king crab, Norton Sound Section, Winter 1991

## Appendix

Appendix

Table 1. Norton Sound winter king crab study, 1991.  
Record of catches for fishing station W1.

| Date     | Soak<br>time<br>(days) | Daily No.<br>males<br>captured | Cum. No.<br>males<br>captured | Daily No.<br>females<br>captured | Cum. No.<br>females<br>captured |
|----------|------------------------|--------------------------------|-------------------------------|----------------------------------|---------------------------------|
| 02/12    | 8                      | 43                             | 43                            | 0                                | 0                               |
| 02/15    | 3                      | 21                             | 64                            | 0                                | 0                               |
| 02/28    | 13                     | 38                             | 102                           | 0                                | 0                               |
| 03/05    | 5                      | 11                             | 113                           | 0                                | 0                               |
| 03/08    | 3                      | 35                             | 148                           | 0                                | 0                               |
| 03/12    | 4                      | 35                             | 183                           | 0                                | 0                               |
| 03/18    | 6                      | 36                             | 219                           | 0                                | 0                               |
| 04/02    | 15                     | 39                             | 258                           | 0                                | 0                               |
| 04/05    | 3                      | 17                             | 275                           | 0                                | 0                               |
| 04/08    | 3                      | 4                              | 279                           | 0                                | 0                               |
| 04/16    | 8                      | 26                             | 305                           | 0                                | 0                               |
| 04/19    | 3                      | 6                              | 311                           | 0                                | 0                               |
| 04/23    | 4                      | 23                             | 334                           | 0                                | 0                               |
| 13 lifts | 78                     | 334                            | 334                           | 0                                | 0                               |

Avg. number of males per pot lift: 25.6

Avg. number of females per pot lift: 0

Appendix

Table 2. Norton Sound winter king crab study, 1991.  
Record of catches for fishing station W2.

| Date     | Soak<br>time<br>(days) | Daily No.<br>males<br>captured | Cum. No.<br>males<br>captured | Daily No.<br>females<br>captured | Cum. No.<br>females<br>captured |
|----------|------------------------|--------------------------------|-------------------------------|----------------------------------|---------------------------------|
| 02/12    | 14                     | 29                             | 29                            | 0                                | 0                               |
| 02/15    | 3                      | 21                             | 50                            | 1                                | 1                               |
| 02/25    | 10                     | 34                             | 84                            | 0                                | 1                               |
| 03/05    | 8                      | 29                             | 113                           | 0                                | 1                               |
| 03/08    | 3                      | 28                             | 141                           | 1                                | 2                               |
| 03/12    | 4                      | 24                             | 165                           | 0                                | 2                               |
| 03/18    | 6                      | 40                             | 205                           | 1                                | 3                               |
| 04/02    | 15                     | 37                             | 242                           | 0                                | 3                               |
| 04/05    | 3                      | 22                             | 264                           | 0                                | 3                               |
| 04/08    | 3                      | 12                             | 276                           | 0                                | 3                               |
| 04/16    | 8                      | 30                             | 306                           | 0                                | 3                               |
| 04/19    | 3                      | 28                             | 334                           | 0                                | 3                               |
| 04/23    | 4                      | 22                             | 356                           | 0                                | 3                               |
| 13 lifts | 84                     | 356                            | 356                           | 3                                | 3                               |

Avg. number of males per pot lift: 27.4

Avg. number of females per pot lift: 0.2

# Appendix

Table 3. Norton Sound winter king crab study, 1991.  
Record of catches for fishing station N2.

| Date     | Soak<br>time<br>(days) | Daily No.<br>males<br>captured | Cum. No.<br>males<br>captured | Daily No.<br>females<br>captured | Cum. No.<br>females<br>captured |
|----------|------------------------|--------------------------------|-------------------------------|----------------------------------|---------------------------------|
| 01/29    | 6                      | 13                             | 13                            | 0                                | 0                               |
| 02/11    | 13                     | 31                             | 44                            | 1                                | 1                               |
| 02/15    | 4                      | 26                             | 70                            | 0                                | 1                               |
| 02/28    | 13                     | 36                             | 106                           | 0                                | 1                               |
| 03/05    | 5                      | 13                             | 119                           | 0                                | 1                               |
| 03/08    | 3                      | 25                             | 144                           | 0                                | 1                               |
| 03/12    | 4                      | 28                             | 172                           | 0                                | 1                               |
| 03/18    | 6                      | 32                             | 204                           | 1                                | 2                               |
| 04/02    | 15                     | 44                             | 248                           | 0                                | 2                               |
| 04/05    | 3                      | 11                             | 259                           | 0                                | 2                               |
| 04/08    | 3                      | 16                             | 275                           | 0                                | 2                               |
| 04/12    | 4                      | 15                             | 290                           | 1                                | 3                               |
| 04/16    | 4                      | 10                             | 300                           | 1                                | 4                               |
| 04/19    | 3                      | 13                             | 313                           | 0                                | 4                               |
| 04/23    | 4                      | 16                             | 329                           | 0                                | 4                               |
| 15 lifts | 90                     | 329                            | 329                           | 4                                | 4                               |

Avg. number of males per pot lift: 21.9

Avg. number of females per pot lift: 0.3

Appendix

Table 4. Norton Sound winter king crab study, 1991.  
Record of catches for fishing station N3.

| Date     | Soak<br>time<br>(days) | Daily No.<br>males<br>captured | Cum. No.<br>males<br>captured | Daily No.<br>females<br>captured | Cum. No.<br>females<br>captured |
|----------|------------------------|--------------------------------|-------------------------------|----------------------------------|---------------------------------|
| 02/11    | 12                     | 23                             | 23                            | 0                                | 0                               |
| 02/15    | 4                      | 0                              | 23                            | 0                                | 0                               |
| 02/28    | 13                     | 39                             | 62                            | 0                                | 0                               |
| 03/05    | 5                      | 10                             | 72                            | 0                                | 0                               |
| 03/08    | 3                      | 20                             | 92                            | 0                                | 0                               |
| 03/12    | 4                      | 26                             | 118                           | 0                                | 0                               |
| 03/18    | 6                      | 26                             | 144                           | 0                                | 0                               |
| 03/28    | 10                     | 20                             | 164                           | 0                                | 0                               |
| 04/02    | 5                      | 24                             | 188                           | 0                                | 0                               |
| 04/05    | 3                      | 20                             | 208                           | 0                                | 0                               |
| 04/08    | 3                      | 20                             | 228                           | 0                                | 0                               |
| 04/12    | 4                      | 8                              | 236                           | 0                                | 0                               |
| 04/16    | 4                      | 18                             | 254                           | 1                                | 1                               |
| 04/19    | 3                      | 3                              | 257                           | 0                                | 1                               |
| 04/23    | 4                      | 7                              | 264                           | 0                                | 1                               |
| 15 lifts | 83                     | 264                            | 264                           | 1                                | 1                               |

Avg. number of males per pot lift: 17.6

Avg. number of females per pot lift: 0.1